“Eligibility Regulations for the Female Classification”: Somatechnics, Women’s Bodies, and Elite Sport

Annette Brömdal1;Mary Lou Rasmussen2;

1. School of Education, Faculty of Business, Education, Law and Arts, Centre for Health Research, Institute for Resilient Regions, University of Southern Queensland, Toowoomba, Queensland, Australia

2. School of Sociology, College of Arts and Social Sciences, Australian National University, Canberra, Australian Capital Territory, Australia

Corresponding Author: Annette Brömdal, School of Education, Faculty of Business, Education, Law and Arts, Centre for Health Research, Institute for Resilient Regions, University of Southern Queensland, Toowoomba, Queensland, 4350 Australia Annette.Bromdal@usq.edu.au; +61 7 4631 1609

# “Eligibility Regulations for the Female Classification”: Somatechnics, Women’s Bodies, and Elite Sport

Employing Nikki Sullivan’s notion of *somatechnics,* this article looks at the bodies of women athletes as sites of embodied subjectivity and considers how they are marked in medical discourses produced by significant cultural entities such as sporting governing bodies and their medical experts involved in the management and treatment of women athletes born with particular intersex variations. Somatechnics is understood in this paper as co-constitutive by developing understanding of how bodies are seen and produced in ways that are always already intertwined. To do this, we draw on two interviews with Dr Patrick Schamasch, the former Medical and Scientific Director of the International Olympic Committee and Dr Hermina Schneider, a Sports Medicine Expert of a European National Olympic Committee and their unique, unreported, and unofficial discourses and actions concerning contemporary eligibility regulations/tests in women’s sport. Building on the notion of somatechnics, our, focus is on developing understanding of the regulation of the corporeality of women athletes. Our aim is not to elucidate the truth of such regulations, but to contribute to an understanding of how modificatory practices aimed at women athletes endure, and the rationales governing the thinking behind those who are the authors of eligibility regulations for the female classification.

**Keywords:** intersex; bodies; somatechnics; modificatory practices; eligibility regulations for the female classification; embodied subjectivity

# Introduction

In this article we look at the bodies of women athletes as highly contested sites of embodied subjectivity. We consider how women’s bodies are marked in medical discourses produced by key figures associated with significant cultural entities such as the International Olympic Committee (IOC), World Athletics (formerly IAAF)[[1]](#footnote-1), and national sports federations. Specifically, this paper draws on previously unreported accounts by Dr Patrick Schamasch, the former Medical and Scientific Director of the IOC, and Dr Hermina Schneider (this is a pseudonym), a prominent sports medicine expert of a Central European National Olympic Committee. Here we explore their unique, untold and unofficial discourses and actions concerning contemporary eligibility regulations/tests[[2]](#footnote-2) in women’s sport, specifically those pertaining to the hyperandrogenism regulations, in parallel with the current IAAF/WA corporeal policy agenda stressing that “high levels of endogenous testosterone circulating in [women] athletes with certain DSDs [46 XY] can significantly enhance their sporting performance” (World Athletics, 2019) and therefore needs to be corporeally governed.

The discourses analysed in this paper continue to be relevant, especially when they are placed genealogically alongside the most recent Swiss Federal Supreme court ruling (2020), supporting and upholding the *Eligibility Regulations for the Female Classification (Athletes with Differences of Sex Development)* (DSD). More specifically in April 2018, the IAAF/WA issued the new DSD Regulations regulating “the conditions that an implicated female athlete must meet in order to be able to participate in international running competitions in the ‘protected class women’, over distances of 400m up to 1 mile. The regulations only apply to female athletes with the genetic variant ‘46 XY DSD’ [whose “circulating testosterone levels in [the] blood [is] of five (5) nmol/L or above” and that those levels are functional and therefore “have a material androgenising effect” (World Athletics, 2019, 4)]. The DSD Regulations require that women athletes lower their testosterone level to below a certain value (5 nmol/L) for six months before a competition and keep it below this value for as long as they wish to compete in equivalent international competitions in the ‘women’ category” (Swiss Federal Supreme Court, 2020, 1).

We understand “Sex… and, by extension, intersex” (Holmes, 2011, 394) to be a combination of social and medical corporeal constructions (Davis, 2015). Persons with intersex variations “are born with physical sex characteristics that don’t fit medical and social norms for female or male bodies” where intersex includes more than 40 variations, and can apply to one in 60 individuals (1.7%) (IHRA, 2019). Given this diversity, it is not surprising that intersex[[3]](#footnote-3) is “a term whose meaning is contested” and is variously described in terms of “disorders of sex development” in medical milieus and erroneously still referred to as “hermaphroditism” within the general public (Davis, 2015, 2). That is, intersex is still pathologised and understood in relation to female/male sexual binary norms[[4]](#footnote-4).

As intersex rights and health advocates and scholars, embracing the community expectations outlined by the Darlington Statement (Androgen Insensitivity Support Syndrome Support Group Australia *et al.*, 2017), we are concerned with how powerful structures and subjective experiences (Sullivan and Murray, 2009) inform, justify and contest the employment of particular *somatechnologies* to conceptualise, limit and govern corporeality and athletic performance in women’s sport. Nikki Sullivan “deploys the term *somatechnics* to think through the varied and complex ways in which bodily-being is shaped not only by the surgeon’s knife but also by the discourses that justify and contest the use of such instruments” (2009, 314). Sullivan argues “that the conceptions of, debates around, and questions about specific modificatory practices are themselves technologies that shape corporeality at the most profound level…” (2009, 314). Ian Morland adds that “one’s embodied cultural location makes…certain somatechnologies intelligible as body modification…prior to any conscious judgement about whether such modifications are right or wrong” (Morland, 2009, 194). Hence, irrespective of whether one agrees or disagrees with the ways in which certain truths, knowledges and corporeal testing regimes are developed and deployed on particular 46 XY DSD women in selected ‘restricted’ international events, mere participation in the debates has a profound and formative influence itself (Sullivan, 2009, 314).

Readers of the *International Journal of Sport Policy and Politics* may already be familiar with debates about eligibility regulations/tests in women’s sport through the works of Roger Pielke (2017), Roslyn Kerr and C Obel (2018), and Shawn Harmon (2020) and their discussions about the role of sporting governing bodies in rendering ‘wrong’ bodies intelligible via coercive testing technologies and modificatory practices in women’s sport. Our focus diverges from media and policy studies of athletes identified as suspect, instead we attend to the desires, feelings and speech of powerful and influential medical experts that have made and enforced the rules and actioned contemporary regimes of “corporeal governance associated with social bodies” in women’s sport such as the IOC, IAAF/WA and national sports federations (Sullivan and Murray, 2009, 5). As such , we write as “somatechnicians” who seek to contribute nuanced understandings regarding “the operations of power that shape corporealities and that are often so naturalised as to be almost invisible” and unconscious, and recognise that we, through this piece, consciously “contribute to the formation and transformation of bodies (of flesh, knowledge, politic) in…unpredictable [critical] ways” (Sullivan and Murray, 2009, 4, 8).

It is important to note that both Schamasch and Schneider’s discourses centre around the institution of the *IAAF Regulations Governing Eligibility of Females with Hyperandrogenism to Compete in Women’s Competition* – the policy before that of the present IAAF/WA and, share a similar intent to that of the current eligibility policy (Karkazis and Carpenter, 2018). The former policy stipulated that women whose functional testosterone levels in the serum were 10nmol/L, or higher, were in the “male range”, and consequently offered them a “competitive advantage” against non-hyperandrogenic women (IAAF/WA, 2011, 12). In 2015 this dual rationale was challenged by the Indian sprinter Dutee Chand and her legal team, suspending the policy on an interim basis, by the Court of Arbitration for Sport (CAS) (CAS, 2015, Karkazis and Carpenter, 2018, CAS, 2018a).

The then IAAF and Athletics Federation of India were invited by the CAS to “submit further written evidence and expert reports addressing the concerns expressed by the CAS Panel” in particular “the actual degree of athletic performance advantage sustained by hyperandrogenic female athletes as compared to non-hyperandrogenic female athletes by reason of their high levels of testosterone” (CAS, 2018a). After two years and an extension, the IAAF/WA “written evidence and expert reports”, were challenged by Caster Semenya, Athletics South Africa and her legal team through a number of legal channels and bodies, which in the end resulted in the current 2019 policy with functional testosterone in the blood reduced to 5nmol/L, and focusing on particular 46 XY women athletes in restricted international events (CAS, 2018b, 2019a, 2019b, Swiss Federal Supreme Court, 2020).

From a “history of the present” standpoint (Foucault, 1979, 31) we consequently draw attention to Schamasch and Schneider’s logics and convictions, including their “status… charged with saying what counts as true” (Foucault, 1980, 131), to provide an insight as to how “the operations of power that shape corporealities” (Sullivan and Murray, 2009, 4) are produced for the fabrication of valid eligibility regulations/tests in women’s sport, and informing the current testing technology debate. Within this context, we are not endeavouring to prove particular experts right or wrong in this analysis, but rather to think further about how bodies, fairness, gender and sex come together in the speech of medical experts. Through the unofficial and subjective discourses of Schamasch and Schneider, situated within powerful religious, medical and scientific beliefs, this paper offers new and unique insights of how past and ongoing practices of the regulation of women athletic bodies inform, justify and contest the employment of particular *somatechnologies* to conceptualise and limit corporeality and athletic performance in specific women’s sport at the international level.

# Methodology and analytical framework

Schamasch and Schneider were recruited between November 2010 and May 2011. Both sports medicine experts have national and international experience in the field of continuing and discontinuing ‘eligibility regulations for the female classification’. Due to the intensified focus on eligibility tests/regulations in women’s sport and particular suspect athletes, these two medical practitioners went out of their way to take part in this research project. Schamasch and Schneider have individually been part of the sports medicine industry for more than 20 years each (at the time of the interview Schamasch had 27 years of industry experience, and Schneider 22 years). They have discussed and influenced eligibility regulation/testing technologies in both individual and cross-border settings and have been in contact with elite women athletes who have been tested as well as suspended from further competing. Thus, they both shared rich ‘insider’ knowledge and experiences with the lead author. These interviews form part of a larger research project (Brömdal, 2013) approved by the Monash University Human Research Ethics Committee. Ethics approval (CF10/1674 – 2101000929) was attained on 17 September 2010.

After providing informed consent, both Schamasch and Schneider engaged in interviews exploring their views, feelings and experiences concerning eligibility tests/regulations in women’s sport, specifically focusing on the justifications centred around a specific ceiling of functional testosterone levels as the valid rationale. The one-on-one, in-depth semi-structured interviews lasted between 60–90 minutes and were conducted by the first author in Lausanne, Switzerland and another town in Central Europe. The interviews were audio-recorded and transcribed verbatim. When it comes to anonymity, this field is small, which means that IOC and National Olympic Committee (NOC) medical representatives or specialists in the area of eligibility tests/regulations in women’s sport may be easily identified by other IOC/NOC members (and others). At the time of the interview, the outgoing Medical and Scientific Director of the IOC still had an official position and was happy to be named, therefore Schamasch’s anonymity was not protected.

In order to protect the anonymity of the other NOC representative of a Central European nation, at their request the lead author intentionally used a pseudonym. We have not presented the clinic, city or even the country from which the NOC member works or their workplace environment. We have only identified their area of expertise, and to the best of our ability, changed or omitted those aspects of their professional history which may identify that individual.

To analyse the interviews, we employed Foucauldian discourse analysis as it conceptualises how discourses are formed through “power relationships and subjectivity” (Lichtman, 2013, 259). Foucault emphasises that discourse is a set of “practices that systematically form the objects of which they speak” (Foucault, 1972, 49) and conveys the complexity and mutability of the term ‘discourse’. In this context, discourse analysis refers to general texts, conversations, and articulations that both affect and reflect the social world that we are part of. It also examines specific articulations and power relations confined to a topic/subject/sphere such as the discourse of knowledges and truths about the maintenance of current regimes of eligibility regulations/testing for the female classification. It is important to note that just as discourses produce practices, they can also regulate, control, eliminate and discipline certain practices, articulations, texts and conversations by creating and re-articulating certain abiding social rules and structures. In keeping with this Foucauldian inspired approach, our aim is not to uncover the truth or the origin of specific claims in these interviews. Rather our attention is on examining the understandings, norms and practices (somatechnologies) that underpin regimes of eligibility regulations/testing for the female classification, thereby sustaining such regulations.

In relation to power and knowledge, Foucault explains in *The Order of Discourse* (1981) that “as history constantly teaches us, discourse is not simply that which translates struggles or systems of domination, but is the thing for which and by which there is struggle” (52-53). In *The history of sexuality, volume 1: An introduction*, Foucault (1990) clarifies the knowledge and power relation in discourse:

Indeed, it is in discourse that power and knowledge are joined together. And for this very reason, we must conceive discourse as a series of discontinuous segments whose tactical function is neither uniform nor stable – we must not imagine a world of discourse divided between accepted discourse and excluded discourse, or between dominant discourse and the dominated one; but as a multiplicity of discursive elements that can come into play in various strategies. (1990, 100)

Discourse in itself is not a tool that spells out diverse power relations; instead, discourse clarifies the subject and the object of power relations which helps us in considering *how* certain idea(l)s about sex, gender, bodies, embodiment and athletic performances are produced, circulated, deployed, justified and contested within and between Schamasch and Schneider. Consequently, our focus is on how medical discourses and conceptualisations of sex are merged together with technologies that regulate sporting bodies and women’s bodies. How do experts identify and regulate, approve and dispel certain notions of embodiment and sex in order to enact what they perceive as fairness, or to uphold “the rules” as they imagine them?

Maggie MacLure’s (2003) set of questions to “open up” texts, also informs our analysis. Also inspired by Foucault, MacLure encourages researchers to pose some basic questions to “open up” the texts they intend to analyse. These questions[[5]](#footnote-5) went to the core of how certain knowledges, truths and power-relations concerning corporeal governance are produced, circulated, deployed, justified and contested by Schamasch and Schneider. These questions also brought into sharper relief those who were made subjects in the transcribed conversations, that is, athletes who may challenge the corporeal governing eligibility regulations; women athletes born with particular intersex variations. Importantly, these questions also enable us to turn the tables, so to speak, and examine the subjectivities of those who make the rules. This is valuable digression from the relentless focus on those who are subject to such rules. The matter of what constitutes worthy knowledge or competent and subjective knowledges made to appear as the “truth” (Foucault, 1980, 131), were further unravelled with the help of the “open up” texts questions (Maclure, 2003, 82).

Analysing Schamasch and Schneider’s interviews informed by these approaches meant that we are attuned to how they constitute normative versus non-normative sex, gender, bodies, embodiment and athletic performances in women’s sports. We attended to the ways in which they speculate about, treat and manage women athletes who challenge norms of sex, gender, embodiment and athletic performances. And, we are also keen to understand *how*, and from *where* these understandings and conceptions emerge.

 In consideration of the above, this article employs Sullivan’s notion of somatechnics, an approach that does not distinguish between bodies, technologies, and associated discourses but rather sees “bodily being (or corporealities) as always already technologized and technologies as always already enfleshed” (Sullivan, 2009, 314). The notion of somatechnics, a term that was coined by a group of scholars involved in conferences on Body Modification in 2003 and 2005[[6]](#footnote-6), sought to “highlight the inextricability of soma and techné, of ‘the body’ (as a culturally intelligible construct) and the techniques (*dispositifs* and ‘hard technologies’) in and through which corporealities are formed and transformed” (Sullivan and Murray, 2009, 3). The term attempted to illuminate how this “reciprocal bond between the sôma and the techné is deeply embedded in the operations of societal power and the governance of private and social bodies” (Sullivan and Murray, 2009, 3). In addition, the concept sought to extend the conversation pertaining to “body modification” beyond “such practices of corporeal transformation as tattooing, piercing, branding, cosmetic surgeries, and other similar…forms of subcultural aesthetic expression within Eurocentric modernity” (Pugliese and Stryker, 2009, 1). As such, the term allows for “the historicity and cultural contingency of embodiment and subjectivity” of body modificatory practices to be explored and offers “opportunities for analyzing the effects of social power in the construction of hierarchies of bodily difference or modes of bodily being…” (Pugliese and Stryker, 2009, 1). To further unpack the ways in which the notion of somatechnologies reveals power structures creating “hierarchies of bodily difference” relevant to this study, Sullivan suggests

We are surrounded by, and have embodied, the idea that while the vast majority of bodies may not be ill, they are nevertheless ‘wrong’ in one way or another: they have too few (or too many) limbs or digits; they (or parts of them) are the wrong size, the wrong age, the wrong color; they are ‘sexually ambiguous’; they bear the wrong ethnic markers; they inhibit particular identities and/or aspirations; they simply do not seem ‘right’. (Sullivan, 2009, 313)

In this context the notion of somatechnics may “engender more-nuanced understanding of and critical responses to the complex and multifaceted technés in and through which embodied being(s) comes to matter in situated contextually specific ways” (Sullivan, 2009, 317). For the purpose of this analysis, somatechnologies can be readily applied in attempting to tease out the ways in which powerful structures and subjective experiences inform, justify, and contest the creation and conceptualisation of hierarchies of bodies, by marking particular bodies and athletics performances as either ‘right’ or ‘wrong’ and effectively limiting and governing corporeality and athletic performances in women’s sport.

We also draw on Feder’s (2009) and Karkazis’ (2008) work on elucidating historical and contemporary medical theories and technologies that influence the management and treatment of individuals born and ‘diagnosed’ with intersex variations. These medical theories and technologies do not only inform the crafting and intelligibility of the eligibility regulations, they also inform the ‘treatment’ of women athletes born with particular intersex variations who wish to become eligible in the ‘female classification’. Utilising these theoretical approaches, medical and scientific institutions such as the IOC, the IAAF/WA, and NOCs, their sports medicine experts produce and circulate certain truths, knowledges and politic about women athletes born with particular intersex variations, their sex, bodies, gender, and athletic abilities/performances. Therefore, we consider the internal medical and scientific voices within governing bodies of elite sport as critical in continuing/discontinuing and supporting/challenging the existence of eligibility regulations for women with particular intersex variations. They have become key players who assume the mantle of being “those who are charged with saying what counts as true” (Foucault, 1980, 131) – though, as we suggest below – their understanding of what is true in this space is by no means straightforward as their “embodied cultural location” informs which somatechnics are, become and discontinue to be intelligible (Morland, 2009, 194). We are deliberately attempting the temptation to moralise about how particular experts moralise. Quite deliberately diverting our gaze to the structures which give produce particular types of truths that may not be readily accessible to those subject to the medical gaze. Our audience is those who might be subject to, or be implicated in, future decision making about the eligibility of bodies that are construed as non-normative.

Drawing on these theorists, we attempt to tease out the ways in which powerful structures and subjective experiences inform, justify and contest the employment of particular *somatechnologies* to conceptualise and limit corporeality and athletic performance in women’s sport. More specifically, in the following analysis of the interview with Schamasch, and later with the Central European sports medicine expert Dr Schneider, our focus is on bringing into view the different knowledges, truths and convictions that feed into and inform contemporary process of eligibility regulations/tests in women’s sport.

# Speculation on sex, gender and elite women’s bodies

It is not very easy to tell a lady that she is not a lady, or that she has some problems. So, it is complicated. It is maybe to investigate to see how this lady feels in her body already. Because you may have some ladies with this kind of problem, and even in their mind may not feel like a lady. Maybe they may, in the deeper part of their brain have something that says ‘I’m not totally normal’. So, I think this psychological approach is for me very very important. Before, and for sure after the potential result, to see how they might truly feel inside. I think that a psychologist, he or she always has a mean to turn around a potential situation to find a way to see what the person really feels inside. (Schamasch, 2011)

Considering discourses associated with contemporary eligibility regulations/tests, this excerpt from Schamasch is a useful point of departure because of the insight it gives into how Schamasch imagined himself, and his relationship with the women athletes with whom he came into contact in the process of conducting eligibility regulations/ tests in women’s sport. Schamasch outlines a dilemma, a phantasmatic encounter with which he is confronted through this process of these regulations/tests. For Schamasch such encounters do not appear to provoke a questioning of his own thinking about sex and gender. Rather, in his telling of the story the role he plays in the process is at once beyond his control (because he has not manufactured the problem, just identified it), difficult, but necessary, and, ultimately even potentially therapeutic.

In Schamasch’s accounts above also little attention is paid to IOC’s role, and those medical, scientific and sports medicine experts serving and representing the IOC, in constructing this dilemma; in naming particular chromosomal configurations and levels of testosterone as problematic; in shaping and labelling particular bodies as abnormal; and, in taking upon themselves the power to determine who is, and is not, a *lady*. Schamasch’s demeanour is that of physician, drawing on the skill of psychologists to counsel women whose bodies are marked by the results of eligibility regulations/tests in women’s sport. He is also speculative, suggesting that “ladies” who undergo testing are possibly already questioning themselves, their minds and their bodies, knowing that something is wrong, “not feeling like a lady”.

Attention is often drawn to the embodiment of athletes who are subject to the gaze of medical experts who determine the rules governing which bodies are admissible in elite sport (Pieper, 2016, Bavington, 2018, Karkazis and Carpenter, 2018, Erikainen, 2019, Pape, 2019, Schultz, 2019, Brömdal *et al.*, 2020). Related to this, Iain Morland argues

that one’s embodied cultural location crucially makes certain somatechnologies intelligible as body modification in the first place, prior to any conscious judgment about whether such modifications are right or wrong. This challenges us to think about the embodiment of all agents in the intersex treatment controversy, not just patients. Doctors and parents have bodies, too. (2009, 194)

Here, our analysis shifts the focus to the ways in which experts’ own embodiment appears to make somatechnologies of eligibility regulations/tests in women’s sport unintelligible. Our gaze here is on the bodies and speech of Schamasch, and later Schneider, and how their own embodiment, desire and systems of belief make certain forms of eligibility regulations/tests in women’s sport intelligible (or unintelligible) as somatechnologies.

In his interview Schamasch talks generally about how he thinks about gender and sex. In response to a question seeking to understand why it is considered unfair to allow certain athletes, specifically those with functional hyperandrogenism/elevated levels of functional testosterone, to compete with other women athletes, Schamasch responded as follows:

*As you know* if these females, or ladies, have functional hyperandrogenism with active receptors, [this] means that they then have testosterone in the male range, this means that they will have an advantage because, *as you know*, testosterone is the hormone which boosts the muscles, so if they have more testosterone than a normal lady, they will potentially have more muscles, which could lead to better performances because muscles are directly linked to performance. That is why we think it would be abnormal and not totally ‘fair’ to allow these ladies to compete with ladies who have lower testosterone or within the female range. (Schamasch, 2011) (Our emphasis)

In his response, Schamasch assumes an authoritative stance, the repetition of *as you know* underlining his medical expertise. But this scientific persona is only one part of Schamasch’s account. His ongoing invocation of ladies suggests a particularly conventional and heteronormative understanding of women, and, one might assume, women’s bodies. This particular brand of scientific expertise, when combined with a very traditional and heteronormative view of sex and gender, is crucial to reading Schamasch’s embodied cultural location, in turn shaping corporality privately, socially and structurally. Schamasch, despite his historically powerful position apropos eligibility regulations/tests in women’s sport, is arguably, not well placed to probe the ethics of these tests and regulations. He saw the eligibility technologies as fixing a pre-existing problem, rather than being complicit in the production of body modification.

Technologies of corporeal governance through the means of eligibility regulations/tests in women’s sport are the subject of much debate. Hida Viloria, an intersex and non-binary activist and educator, is critical of people such as Schamasch because, from Viloria’s perspective, these experts “are informed not by scientific evidence, but by age-old cultural assertions that those who do not conform to gender roles are not ‘real’ women or men” (Viloria and Martínez-Patiño, 2012, 17). Here we can see different layers in the production of intersex bodies within the field of eligibility regulations/tests in women’s sport, specifically with regard to the “construction of hierarchies of bodies” (Pugliese and Stryker, 2009, 1) and how medical and scientific representatives of the IOC, such as Schamasch, are “deeply embedded in the operations of societal power and the governance of private and social bodies” (Sullivan and Murray, 2009, 3). In the interview excerpt above Schamasch uses the language of science to argue for and validate the tests/regulations, arguments refuted by Viloria, (Viloria and Martínez-Patiño, 2012).

We think it is important to juxtapose these two perspectives. Ellen Feder’s (2009) study of the treatment of intersex is instructive for this process, arguing:

If normalization shapes what he [Foucault] terms the ‘grid of intelligibility of the social order,’ we must understand *both* the medicalization of intersex, as well as the production of the figure of the hermaphrodite, whether in history or today’s intersex activist…to be counted among normalization’s effects. (Feder, 2009, 236)

Informed by Foucault and somatechnics, we seek to better apprehend these intersecting grids of intelligibility that simultaneously seek to medicalise and/or liberate women athletes. Morland argues “the traditional treatment model straddles multiple understandings of selfhood in Western culture — a potent mix…which has appealed for many years to traditionalists and progressives alike” (2009, 195). Our analysis here gives more contours to current debates about medicalisation/pathologisation of the category of intersex in elite sport by attending to ways the personal, religious, medical and political beliefs intertwine in the minds of experts who have been fundamental to the production of somatechnologies rationalising the intelligibility of eligibility testing/regulations.

For Schamasch, another one of the aims of testing is to ensure that “ladies” with elevated levels of functional testosterone receive appropriate treatment for their condition. Below Schamasch invokes therapeutic language in his justification of the need for testing of specific athlete’s testosterone levels.

You know that ladies have testosterone in their bodies, but not in the male range, so if they have hyper production, it means that they have a reason, and we need to find the reason and treat the reason. And to bring the lady, in what may be called a normal lady range…if you have something abnormal in the body, you try to find why that is abnormal and you try to put it back to normal. That is what I have learned as a physician. (Schamasch, 2011)

Here Schamasch invokes the responsibility of the physician to care for a patient through the process of seeking to normalise the body. The logic Schamasch employs here is in line with Katrina Karkazis’ (2008) reading of the rationale medical professionals provide for early medical intervention related to children born with intersex variations, and that have been “diagnosed” with one:

From a medical standpoint, what is at issue in debates over intersexuality is not the category intersex per se, but what theories and technologies are most appropriate to treat individuals with intersex diagnoses. It is rare for clinicians to view the line separating intersex from non-intersex as culturally determined because most physicians see their taxonomies as apart from culture, not as reproducing culture. (2008, 4-5)

This observation of clinician’s understanding of intersex as biological and not culturally determined, is, we argue, crucial in understanding Schamasch’s rationale for continued regimes of testing. More specifically, it “brings to light the operations of power that shape” (Sullivan and Murray, 2009, 4) the rationale for needing various forms of eligibility regulations/tests in women’s sports since the 1930s to today (Pieper, 2016, Erikainen, 2019, Brömdal *et al.*, 2020). Here, the 80+ years of steady fabrication of “wrong bodies” in need of fixing’, with elevated levels of functional testosterone as today’s “wrong” bodies as these “have too… many… digits” of what is eligibly permissible (Sullivan, 2009, 313), provide further cover for the utterance of Schamasch’s comments and perspectives to ensure meaningful and fair competition in women’s sport.

IOC and IAAF/WA somatechnologies related to eligibility regulations/tests in women’s sport are central to understanding Schamasch’s comments and perspectives For example, the IAAF/WA insist that “relevant” women athletes are by no means obliged to undergo tests or treatment, but in not doing so the consequence is ineligibility in “restricted events” ranging from 400m to one-mile races and track events in the “female classification”, or alternatively these women can compete in the male classification, or in an as yet non-existent intersex category (2019, 4-5). The IAAF/WA justify that ‘relevant athletes’ need to be medically evaluated and they will then decide whether the investigated athlete is eligible or not, or if the athlete may be subjected to meet certain conditions before allowed to compete (2019). Clearly this standpoint is not new; it has been expressed by powerful medical voices in the IOC and the IAAF/WA, since the 1930s onwards (Pieper, 2016, Erikainen, 2019, Brömdal *et al.*, 2020). Schamasch also articulates this standpoint in connection to the hyperandrogenism regulation, by stating that:

The fact to compete is not compulsory [sic], we have rules, we have male and female – ladies and gentlemen – competitions and it is not compulsory to compete. If the lady who has these problems without any other abnormality, physical abnormality or something like that, and wants to compete, he/she has to accept the rules. (Schamasch, 2011)

Our somatechnic analysis of Schamasch’s comments is not an attempt to moralise, but rather to better understand differing conceptualisations of justice and their relationship to perceptions of bodily being-in-the-world. These conceptualisations are constantly restated, renegotiated and they are always contextually specific (Bruining, 2013, 154). Such a reading helps explain Schamasch words, and deeds; it helps us see how some experts in sport conceptualise what is normal, and what is a problem in terms of embodiment – and how this is informed by a faith in endosexist understandings of sex. It is possible to argue that the consistency between words and practices displayed by Schamasch underpin his rationalisation of the technologies for which he was, in part, responsible. We also recognise the irony of this as it has been well demonstrated that the somatechnologies associated with eligibility regulations are anything but consistent, both in terms of the testing technology, the names of the policies, and the rationales of implementing these corporeal governing eligibility regulations (Brömdal, 2013, Pieper, 2016, Bavington, 2018, Erikainen, 2019, Brömdal *et al.*, 2020). In drawing our attention, once, again, to the acceptance of these rules Schamasch also illustrates how the doubts, beliefs and desires that permeate these rules (these somatechnologies) are effaced. Particular suspicions and accusations related to sex and gender thrive in such a climate. Athletes have been complicit in these rules; but they must also submit to medical and psychological interrogation or the gate is closed on their athletic career (Schamasch, 2011) in ‘restricted events’ (World Athletics, 2019).

In her discussion on the nomenclature of intersex, Feder draws on Foucault in *Discipline and Punish* and his insistence that “we must cease once and for all to describe the effects of power in negative terms: it ‘excludes,’ it ‘represses,’ it ‘censors,’ it ‘abstracts,’ it ‘masks,’ it ‘conceals.’ In fact, power produces” (Foucault, 1979, p. 194 in Feder, 2009, 234). Feder highlights Foucault’s emphasis on power as productive, which is helpful in our thinking about Schamasch and the employed somatechnologies, where the macro power structures of corporeal governance have created a ceiling of permissible functional testosterone in restricted women’s sport, and in turn creates a set of negative micro implications on those affected such as pathologisation, exclusion, repression, coercion and silencing.

For Karkazis, the medical establishment is more benevolent than malevolent (Karkazis, 2008, 27), which, she emphasises, is not to say that its practices are to be upheld or unquestioned. From this perspective, it is critical that clinicians/physicians’ beliefs about gender and sex not be seen as somehow separate from the societies of which they are a part. This is why in a study of the somatechnics of eligibility regulations/tests in women’s sport, it is salient to not only consider how cultural, historical and religious beliefs inform medical experts understanding of sex and gender – in order to try catch experts out as it were, to fault their ideas. We do not set out to agree with or provide a rationale for Schamasch’s logic. Our analysis here tries to trace the ways in which Schamasch is both embedded in and responsible for the production of regulations and conventional trajectories of thought about the ‘female’ body in society, and, in elite sport. One clinician/physician, even one as historically powerful as Schamasch was in the Olympic movement and beyond, cannot bear sole responsibility for the sustenance of these somatechnic regimes of eligibility regulations/tests in women’s sport. Authority and power within medicine are diffuse.

In his reflections on a roundtable “Intersex Practice, Theory, and Activism” where participants considered legal, ethical and cultural dilemmas surrounding intersex Morland (2009) notes

…what counts *as* a dilemma is inseparable from the material conditions under which sex and gender assignments are made. Such conditions include the power of the law to structure interactions between clinicians and families; the coexistence of lay and expert discourses about genital normality; and the cultural circulation of representations of sexual dissidence. (Morland, 2009, 193)

The locus of power in defining intersex is difficult to pin down, both in sex and gender assignment, and in eligibility regulations/tests in women’s sport of athletes. The attempt to account for regimes of testing through recourse to psychoanalytic accounts of immortality and corporeal mastery located in the mind of Schamasch, or even in the structures of the IOC and the IAAF/WA, is, in our opinion, somewhat misconceived. Such analysis does not attend closely enough to the coexistence of legal, medical, scientific, affective, moral, (endo)sexist, nationalist, lesbian and transphobic interactions that produce the material conditions under which the eligibility regulations/tests in women’s sport continue. Neither Schamasch, the IOC nor the IAAF/WA could continue with the somatechnologies of eligibility regulations/tests in women’s sport, without the co-existence of a multitude of lay and expert discourses that continuously work to normalise sex and gender.

The dilemmas and “out of bounds” posed by intersex elite women athletes (Karkazis *et al.*, 2012, 3) need to be contextualised beyond the IOC, the IAAF/WA and their medical experts. This is not to remove the IAAF/WA, IOC or Schamasch from any culpability in the sustenance of pernicious regulations that sustain the abjection of non-normative women athletes, but it is an attempt to underscore the networks of power that call such practices into being, as well as legitimising their continuation. As Susan Stryker and Nikki Sullivan note, “The intelligible body (subject) is the materialisation, or sedimented effect, of these specific (tacit) pacts and covenants’, or somatechnologies” (2009, 52). In illustrating the tacit technologies or sedimented effects that sustain binary and endosexist thinking within and beyond the IOC other elements of the interview with Schamasch are both unique (because they are candid) and intrusive (because it is rare to get insights into the formation of somatechnologies).

In response to questioning the possibility of eliminating all divisions based on sex in elite sport, Schamasch replied “I do not have any concerns to have only one category, but I have a concern, because I do not think that it will be fair, and I prefer to see nice ladies playing beach volleyball” (2011). Schamasch scopohilic attachment to women’s volleyball is unremarkable. As Sailors, Teetzel, and Weaving (2012) note in their commentary on media representations of women’s Olympic beach volleyball “we find no evidence of progress in how women are treated or portrayed. Women are still confined to two acceptable roles, sex object or mother, both of which trivialise their athletic abilities and inherent value” (4). This is borne out in 2021 when we see Olympians playing beach volleyball being fined for refusing to don the bikinis Schamasch references above.

 What is more significant in terms of this argument regarding somatechnics, is how “ladies playing volleyball” emerges in this interview related to the regulation of sex in sport. Here we see how desire for particular types of women’s bodies – those that look good in a bikini – become part of the sedimentary layers that might also produce and reinforce regulations related to eligibility in other areas of elite sport. We also wonder, who are the unseen bodies that Schamasch, and those who have overtaken his powerful role, would prefer not to see? How do these unseen and unnamed bodies play a part in decisions of sporting governing bodies’ medical experts about “female” bodies an elite sports? Our purpose in pointing to the desires for particular sorts of women’s bodies that surface in Schamasch’s accounts is to draw attention to the contexts that underpin and inform expert medical decisions about which “female” bodies are able to compete. If, as we suggest, somatechnologies of women’s bodies in elite sport are seen to be partially embedded in particular understandings of sexiness, as opposed to sex, will they hold less, or more, sway?

Religious justifications for the regulation of sex and gender in elite sport also emerge during Schamasch’s interview.

For the moment, I will come back to the good book [the Bible]. God has created the male and the female. *For me, I am not at all against a third sex or a fourth sex, but when it comes to sports, we should keep two categories,* I do not think it is feasible to introduce new categories. That is my feeling, and I do not have any explanation, because that is my old Christian belief. I totally changed my approach on gay and lesbianism, I was very fundamentalist when I was young, and things have changed a little bit on that, but society has two categories and I do not see the need to have a third one or a fourth one. I do not have any explanation in my brain in, my mind, sorry. (Schamasch, 2011) (Emphasis ours)

Here Schamasch’s rationalisation for eligibility regulations/tests in women’s sport shifts toward the significance of religious belief. If one believes that “God has created the male and the female” then bodies that do not fit with this belief will be out of place. What is significant here is how for Schamasch religious and medical beliefs about gender and sex appear to be commensurate. Schamasch’s belief that “when it comes to sport, we should keep two categories” is part of a grid of intelligibility that is informed by cultural beliefs about the desirability of sex segregation, his religious belief about God creating “the male and the female” and medical beliefs about elevated functional testosterone levels. It is beyond the scope of this paper to delve into the connections between fundamentalist Christianity and beliefs about gender and sexuality, but in thinking through Schamasch’s comments we refuse an easy alignment between sexual regulation and religion. Our purpose in drawing attention to Schamasch’s religious beliefs is that it helps to illustrate how the co-existence of his medical and religious beliefs works to reinforce his stance on eligibility regulations/tests in women’s sport. While Schamasch reveals that his belief in regard to sexual identification has been malleable, his comments suggest that his belief in two sexes is unlikely to be shaken. In attending to the co-existence of beliefs it is possible to grasp what sustains, and, what might alter, somatechnologies that sustain current policies relating to eligibility regulations/tests in women’s sport.

Within the field of sports medicine, Schamasch’s views on eligibility regulations/tests in women’s sport are not uncontested. Another Central European Sports Medicine Expert, Dr Hermina Schneider, also interviewed by the lead author, discursively outlined some of her encounters with the process of mandatory laboratory-based chromosomal sex verifications used between 1968 and 1992, dictating whether a woman athlete met (46XX) or did not meet (46 XY) the sex-based criteria to compete in women’s sport (Pieper, 2016, Erikainen, 2019). Regarding this mandatory laboratory-based sex chromosome tests, and from a “history of the present” perspective (Foucault, 1979, 31), Schneider cited one instance in which

…we got a fax that two of our female athletes were males. That was the wording. And that they could not compete anymore in the female competitions. It was really awful, because we got the fax in a normal way…everybody knew about this and it went around and it was just incredible…we were talking to the journalists – please do not destroy these girls…but you know that it is such a story that it went out…we never got an explanation…we asked from the Federation – we never got an answer…I was very happy that they stopped the [mandatory chromosome] testing [of all women athletes]. (Schneider, 2010)

For Schneider, the somatechnologies that underpin eligibility regulations/tests in women’s sport are suspect partially because of the ways in which they expose athletes’ lives to scrutiny. She recognised that the decision to subject a body to eligibility regulations/tests in women’s sport have implications in the media and cause problems for athletes based on both the associated publicity and because of the undecidability of regimes of these regulations/tests.

Even as Schneider was happy to see an end to compulsory eligibility regulations/tests in women’s sport, by ending the story above by assuring “we knew that they [women athletes] had ‘regular’ findings and ‘regular’ hormones”. For Schneider this detail was important in the telling of this story because her concerns about eligibility regulations/tests in women’s sport were affirmed when she knew that “regular” athletes had been targeted. Schneider was much more ambivalent about eligibility regulations/tests in women’s sport when it involves athletes who she would classify as irregular athletes/bodies due to their irregular levels of hormones.

While Schneider was happy that mandatory sex chromosome regulations/tests have ceased, she still believes that women athletes can be disadvantaged by the presence in competition of some athletes with elevated levels of functional testosterone. She states

…sometimes you have athletes that really look like ‘male’…you have big girls, strong and so sometimes at the age of 14, 15, 16 so different to the others that there is always suspicion. They are always talking (the others in the team) is she, is she not…and they are saying what is wrong with her? (Schneider, 2010)

For Schneider, and, for the women athletes with whom she came into contact, suspicion about girls that look male, strong and/or big continues. She attributes this concern as primarily related to levelling the playing field, noting that if an athlete is at “the world championship or the Olympics then it is worse to have someone who is better than you in your team competing at your position” (Schneider, 2010). These comments are a reminder of the ways in which disruptive bodies disturb “the (imaginary) body politic” (Stryker and Sullivan, 2009, 52), and reveal “institutional limits on realizing alternative…bodies” (Pape, 2019, 8). Manifest here in a belief, that, but for the presence of ‘masculine’ looking women, elite sport constitutes a level playing field.

Stryker and Sullivan perceive “somatechnologies function[ing] as ‘the capillary space of connection and circulation between the macro- and micro-political registers through which the lives of bodies become enmeshed in the lives of nations, states, and capital formations’” (2009, 52). The high stakes associated with elite sports sees continued attempts to bring women’s bodies into line. Yet the somatechnologies do not flow smoothly, they are at once challenged and upheld at the capillary level by diverse somatechnician scholars, advocates, athletes and medical experts (such as Pielke, 2017, Bavington, 2018, Karkazis and Carpenter, 2018, Karkazis and Jordan-Young, 2018, Sönksen *et al.*, 2018, Erikainen, 2019, Pape, 2019, Pielke *et al.*, 2019, Schultz, 2019, World Medical Association, 2019, Brömdal and Davis, 2020, Brömdal *et al.*, 2020).

Somatechnologies might also be understood as part of what Paul Rabinow and Nikolas Rose describe as a “political economy of vitality” (2006, 215). They argue that this economy comprises

…transnational flows of knowledge, cells, tissues and intellectual property [that] are coupled with local intensifications are regulated by supranational institutions. Mobilizations of persons, tissues, organs, pathogens and therapeutics operate at different speeds and encounter local obstacles and incitements. (Rainbow & Rose, 2006, p. 215)

This “political economy of vitality” is clearly present in the cultivation of somatechnologies in elite sport. Somatechnologies associated with eligibility regulations/tests in women’s sport enmesh bodies of athletes, international organisations such as the IAAF/WA and the IOC, the National Sports Federations, and, capital formations as evidenced by rabid media pursuit of athletes whose subjection to eligibility testing regimes becomes public. Bodies, cells, hormones and competing therapeutic understandings of the medical treatment of intersex circulate together, creating and recreating transnational flows of knowledge about the bodies of women athletes.

One example of how the flow of somatechnologies related to eligibility regulations/tests can be uninterrupted is evidenced by Schneider’s frustration with the inability of somatechnologies to resolve her question “how do you define sex?”:

I think that there is a major problem, I think it depends on how you define these groups, and where male stops and female begins, or male begins and female stops (how do you define sex?) If you put them in clearly defined separate groups, then to pass as a disabled group is pretty short. If there is a female population and a male population, then there are some that are in-between, are they normal? Legally, are they normal? Can they decide themselves what they are, I am male, or I am female? (Schneider, 2010)

For Schneider sex is something she wants to be able to define, but she understands that she cannot. This is her “major problem”. Her question about whether athletes should get to decide if they are a man or a woman is recognition of the malleability of sex, but she is clearly also discomforted by the idea of leaving this decision to athletes. Can they be trusted to make the right decision? Schneider’s identification of this problem also suggests that there is distinct difference between her and Schamasch, because she can perceive this as a somatechnological dilemma. These somatechnologies are intelligible to her, as are her and the IOC and IAAF/WA’s fraught role in their production. While for Schamasch this particular dilemma appears unintelligible.

Schneider’s frustration with the lack of specificity about how bodies might be classified is mutually constitutive of the problem that confounds her. The power of the imagined normal ensures a continuing debate about somatechnologies by medical and scientific experts. What is significant in Schneider’s account is her palpable discomfort with existing somatechnologies and the harm she has witnessed in their operation, as part of the powerful political apparatus of elite sport. Such obstacles in the capillaries of eligibility technologies in women’s sport are creating momentum for a change in the political economy of elite sporting bodies. The qualms that pepper Schneider’s discussion of eligibility regulations/tests in women’s sport may “discipline clinicians into managing intersex differently” (Morland, 2009, 193).

# Concluding remarks

What might this study of somatechnologies associated with eligibility testing/regulatory regimes in women’s sport contribute to contemporary understanding of gender and sex? John Sloop, in his analysis of public debates about athletes who have been subject to this corporeal governance, argues that this public discourse is an “emphatic restatement that gender norms remain largely in place… there are locations in which gender remains stridently fixed. International competition is clearly one such point of intersection” (2012, 92). Our analysis has attempted to account for how it is that particular beliefs about sex, gender, bodies, embodiment and athletic performance are produced in this arena.

In this examination of somatechnologies of eligibility testing/regulatory regimes in women’s sport, it is possible to see how sports medicine experts often make clear distinctions between bodies and technologies, rather than seeing bodies “as always already technologized and technologies as always already enfleshed” (Sullivan, 2009, 314). Our analysis has focused on the ways in which medical experts continue to attempt to draw distinctions between bodies, and, between bodies and technologies of eligibility testing/regulatory regimes in women’s sport. Such distinctions are reinforced, knowingly and unknowingly, by desires for specific types of bodies, by religious, medical and scientific beliefs, and essentialising knowledges of sex and gender. Together, these continuously produce somatechnologies informing processes of eligibility testing/regulatory regimes in women’s sport.

It is also apparent from our analysis that the questions of what a woman’s body is, and what a woman’s body can do are unresolved. It is unlikely that such questions will ever be resolved, because somatechnologies are not static. This lack of resolution is the cause of some angst for some of those, such as Schneider, who are responsible for enforcing the somatechnologies that currently govern women’s participation at the elite level. Though for many others the binary and endosex conviction continues to be an unshakeable certainty, and this is critical to the continued sustenance of these somatechnologies.

If there was no support for such technologies among women athletes it is, we think, questionable whether they could be maintained with such force in elite sport. Hida Viloria has contributed thoughts on this topic too. Post attending an IOC expert meeting in Lausanne in 2011, Viloria co-authored an article reporting in part on the conduct of this meeting. Here Viloria situates the contributions of women athletes invited to participate as crucial to the sustenance of somatechnologies of eligibility regulations/tests in women’s sport:

One might suspect that physical appearance would not be the cause for sanctions, and that given the lack of evidence that hyperandrogenism confers advantages, the IAAF and IOC representatives would abandon their proposed policies. However, the athletes at Lausanne subjected them to tremendous pressure. They insisted that if something were not done, female athletes would go on strike. It is under this pressure that the IAAF and IOC resolved to use the testosterone theory as the basis for their new policies. (Viloria and Martínez-Patiño, 2012, 17)

According to Viloria, women athletes who are not subject to sex/gender questioning are crucial in the continued reification of particular forms of female embodiment through technologies such as eligibility regulations/tests in women’s sport. This is another significant aspect of the grid of intelligibility that gives shape to these somatechnologies. Parallel to this, it is important to qualify that there are women athletes who are not subject to sex/gender questioning or the technologies of eligibility regulations/tests in women’s sport who openly oppose these regimes of somatechnologies (Bavington, 2018, Navratilova, 2019, Pape, 2019). Though in the absence of these technologies, it is likely that certain bodies would continue to be subject to scrutiny and suspicion as bodies and technologies will always be entwined.

In writing this article we have deliberately avoided focusing our analysis on particular athletes who have become synonymous with somatechnologies of eligibility regulations/tests in women’s sport. Rather, we have identified the contours of particular understandings of the ‘normal female body’, sex and fairness that are intertwined with somatechnologies of eligibility regimes in women’s sport. We have also indicated some of the ways in which these contours continue to shift, bringing certain bodies into view while effacing others. This is recognition of how specific processes underpinning the technologies of these eligibility regulations/tests are differently embodied – and of how these differences are part of the ways in which specific discourse on eligibility governing regimes in women’s sport are produced and sustained.

# References

Androgen Insensitivity Support Syndrome Support Group Australia, Intersex Trust Aotearoa New Zealand, Organisation Intersex International Australia, Black, E., Bond, K., Briffa, T., Carpenter, M., Cody, C., David, A., Driver, B., Hannaford, C., Harlow, E., Hart, B., Hart, P., Leckey, D., Lum, S., Mitchell, M.B., Nyhuis, E.N., O’callaghan, B., Perrin, S., Smith, C., Williams, T., Yang, I. & Yovanovic, G., 2017. *Darlington Statement* [online]. <https://ihra.org.au/darlington-statement/> [Accessed Access Date

Bavington, D.L., 2018. Sex control in women’s sport: a history of the present regulations on hyperandrogenism in female athletes. *In* V. Krane (ed.) *Sex, Gender, and Sexuality in Sport: Queer Inquiries.* New York: Routledge, 181-200.

Brömdal, A., 2013. The Phantom Category of 'Intersex' in Elite Sports: Knowledge about 'Disturbing' Female Bodies and Athletic Performances. Monash University.

Brömdal, A. & Davis, I., 2020. The Pedagogical Possibilities of Critically Examining Gender and Sexuality in Initial Teacher Education Through the Lens of Intersex. *In* H. Van Rensburg & S. O’neill (eds.) *Inclusive Theory and Practice in Special Education.* Hershey, PA: IGI Global, 99-123.

Brömdal, A., Olive, R. & Walker, B., 2020. Questioning representations of athletes with elevated testosterone levels in elite women’s sports: a critical policy analysis. *International Journal of Sport Policy and Politics,* 12**,** 699-715.

Bruining, D., 2013. A Somatechnics of Moralism: New Materialism or Material Foundationalism. *Somatechnics,* 3**,** 149-168.

Court of Arbitration for Sport, 2015. *CAS2014/A/3759 Dutee Chand v. Athletics Federation of India (AFI) & The International Association of Athletics Federation (IAAF)* [online]. <http://www.tas-cas.org/fileadmin/user_upload/award_internet.pdf> [Accessed Access Date 2018].

Court of Arbitration for Sport, 2018a. *Athletics - Dutee Chand Case: The Application of the IAAF Hyperandrogenism Regulations Remain Suspended* [online]. Court of Arbitration for Sport. Available from: <http://www.tas-cas.org/fileadmin/user_upload/Media_Release_3759_Jan_2018.pdf> [Accessed Access Date 2018].

Court of Arbitration for Sport, 2018b. *Athletics - Caster Semenya Challenges the IAAF Eligibility Regulations for Female Classification at the Court of Arbitration for Sport (CAS)* [online]. Court of Arbitration for Sport. Available from: <https://www.tas-cas.org/fileadmin/user_upload/Media_Release_Semenya_IAAF.pdf> [Accessed Access Date 2018].

Court of Arbitration for Sport, 2019a. *Athletics - CAS Arbitration: Caster Semenya, Athletics South Africa (ASA) and International Association of Athletics Federation (IAAF): Decision* [online]. Court of Arbitration for Sport. Available from: <https://www.tas-cas.org/fileadmin/user_upload/Media_Release_Semenya_ASA_IAAF_decision.pdf> [Accessed Access Date 2019].

Court of Arbitration for Sport, 2019b. *Semenay, ASA and IAAF: Exexutive Summary* [online]. <https://www.tas-cas.org/fileadmin/user_upload/CAS_Executive_Summary__5794_.pdf> [Accessed Access Date 2019].

Davis, G., 2015. *Contesting intersex: The dubious diagnosis* New York: NYU Press.

Erikainen, S., 2019. *Gender Verification and the Making of the Female Body in Sport: A History of the Present* London: Routledge.

Feder, E.K., 2009. Imperatives of Normality: From “Intersex” to “Disorders of Sex Development”. *GLQ: A Journal of Lesbian and Gay Studies,* 15**,** 225-247.

Foucault, M., 1972. *The archaeology of knowledge and the discourse on language* New York: Pantheon Books.

Foucault, M., 1979. *Discipline and Punish : The Birth of the Prison* Harmondsworth: Penguin Books.

Foucault, M., 1980. Truth and Power. *In* C. Gordon (ed.) *Power/knowledge: Selected interviews and other writings, 1972-1977 by Michel Foucautl.* Brighton, Sussex: The Harvester Press, 109-133.

Foucault, M., 1981. The order of discourse. *In* R. Young (ed.) *Untying the text: A post-structuralist reader.* Boston: Routledge & Kegan Paul, 48-78.

Foucault, M., 1990. *The history of sexuality* New York: Vintage Books.

Harmon, S.H.E., 2020. Gender inclusivity in sport? From value, to values, to actions, to equality for Canadian athletes. *International Journal of Sport Policy and Politics,* 12**,** 255-268.

Holmes, M., 2011. The intersex enchiridion: Naming and knowledge. *Somatechnics,* 1**,** 388-411.

International Association of Athletics Federation, 2011. *IAAF regulations governing eligibility of females with Hyperandrogenism to compete in women's competition.* [online]. <https://www.sportsintegrityinitiative.com/wp-content/uploads/2016/02/IAAF-Regulations-Governing-Eligibility-of-Females-with-Hyperandrogenism-to-Compete-in-Women>’s-Competition-In-force-as-from-1st-May-2011-6.pdf [Accessed Access Date 2019].

Intersex Human Rights Australia, 2019. *Intersex for allies* [online]. Intersex Human Rights Australia,. Available from: <https://ihra.org.au/allies/> [Accessed Access Date 2020].

Karkazis, K., 2008. *Fixing sex: Intersex, medical authority, and lived experience* Durham, NC: Duke University Press.

Karkazis, K. & Carpenter, M., 2018. Impossible “choices”: The inherent harms of regulating women’s testosterone in sport. *Journal of bioethical inquiry,* 15**,** 579-587.

Karkazis, K., Jordan-Young, R., Davis, G. & Camporesi, S., 2012. Out of bounds? A critique of the new policies on hyperandrogenism in elite female athletes. *The American Journal of Bioethics,* 12**,** 3-16.

Karkazis, K. & Jordan-Young, R.M., 2018. The powers of testosterone: Obscuring race and regional bias in the regulation of women athletes. *Feminist Formations,* 30**,** 1-39.

Kerr, R. & Obel, C., 2018. Reassembling sex: reconsidering sex segregation policies in sport. *International Journal of Sport Policy and Politics,* 10**,** 305-320.

Lichtman, M., 2013. *Qualitative research in education: A user's guide* California: Sage: Thousand Oaks.

Maclure, M., 2003. *Discourse in educational and social reserach* Buckingham: Open University Press.

Morland, I., 2009. Introduction: Lessons from the Octopus *GLQ: A Journal of Lesbian and Gay Studies,* 15**,** 191-197.

Navratilova, M., 2019. *Update on Caseter Semenya* [online]. <https://www.martinanavratilova.com/update-on-recent-transgender-debate> [Accessed Access Date

Pape, M., 2019. Expertise and Non-binary Bodies: Sex, Gender and the Case of Dutee Chand. *Body & Society,* 25**,** 3-28.

Pielke, R., 2017. Sugar, spice and everything nice: how to end ‘sex testing’ in international athletics. *International Journal of Sport Policy and Politics,* 9**,** 649-665.

Pielke, R., Tucker, R. & Boye, E., 2019. Scientific integrity and the IAAF testosterone regulations. *The International Sports Law Journal,* 19**,** 18-26.

Pieper, L., 2016. *Sex testing: Gender policing in women's sports* Urbana: University of Illinois Press.

Pugliese, J. & Stryker, S., 2009. The somatechnics of race and whiteness. *Social Semiotics,* 19**,** 1-8.

Rabinow, P. & Rose, N., 2006. Biopower Today. *BioSocieties,* 1**,** 195-217.

Sailors, P.R., Teetzel, S. & Weaving, C., 2012. No Net Gain: A critique of media representations of women's Olympic beach volleyball. *Feminist Media Studies,* 12**,** 468-472.

Schamasch, P., 2011. *In* A. Brömdal (ed.).

Schneider, H., 2010. *In* A. Brömdal (ed.).

Schultz, J., 2019. Good enough? The ‘wicked’ use of testosterone for defining femaleness in women’s sport. *Sport in Society***,** 1-21.

Sloop, J.M., 2012. “This is Not Natural:” Caster Semenya's Gender Threats. *Critical Studies in Media Communication,* 29**,** 81-96.

Sönksen, P., Bavington, L.D., Boehning, T., Cowan, D., Guha, N., Holt, R., Karkazis, K., Ferguson-Smith, M.A., Mircetic, J. & Bőhning, D., 2018. Hyperandrogenism controversy in elite women’s sport: an examination and critique of recent evidence. *British Journal of Sports Medicine,* 52**,** 1481-1482.

Stryker, S. & Sullivan, N., 2009. King's member, Queen's body: Transsexual surgery, self-demand amputation and the somatechnics of sovereign power. *In* N. Sullivan & S. Murray (eds.) *Somatechnics : queering the technologisation of bodies.* Farnham, UK: Ashgate, 49-63.

Sullivan, N., 2009. The Somatechnics of Intersexuality. *GLQ: A Journal of Lesbian and Gay Studies,* 15**,** 313-327.

Sullivan, N. & Murray, S., 2009. Introduction. *In* N. Sullivan & S. Murray (eds.) *Somatechnics: Queering the Technologisation of Bodies.* Farnham: Ashgate, 1-10.

Swiss Federal Supreme Court, 2020. *Press Release on the Swiss Federal Supreme Court* [online]. <https://www.bger.ch/files/live/sites/bger/files/pdf/en/4A_248_2019_yyyy_mm_dd_T_e_18_18_10.pdf> [Accessed Access Date 2020].

Viloria, H.P. & Martínez-Patiño, M.J., 2012. Reexamining Rationales of “Fairness”: An Athlete and Insider's Perspective on the New Policies on Hyperandrogenism in Elite Female Athletes. *The American Journal of Bioethics,* 12**,** 17-19.

World Athletics, 2019. *Eligibility regulations for the female classification (athletes with differences of sex development)* [online]. <https://www.worldathletics.org/download/download?filename=656101dc-7716-488a-ab96-59d37941e9ac.pdf&urlslug=C3.6%20-%20Eligibility%20Regulations%20for%20the%20Female%20Classification> [Accessed Access Date 2020].

World Medical Association, 2019. *Physicians leaders reaffirm opposition to IAAF rules* [online]. World Medical Association,. Available from: <https://www.wma.net/news-post/physician-leaders-reaffirm-opposition-to-iaaf-rules/> [Accessed Access Date 2019].

1. Following a Congress decision in June 2019, the International Association of Athletics Federation (IAAF) changed its official name to World Athletics (WA). As this research deals with time periods prior and post to the name change, we adopt the acronym IAAF/WA when referring to the organisation throughout this analysis. [↑](#footnote-ref-1)
2. We will collectively be referring to sex testing/femininity testing/gender verifications /hyperandrogenism regulations/differences of sex development regulations as *eligibility regulations/tests in women’s sport.* [↑](#footnote-ref-2)
3. This analysis makes use of the following terminologies when referring to the same cohort of people: ‘intersex’, and ‘differences of sex development’ (DSD). [↑](#footnote-ref-3)
4. The Darlington Statement (Androgen Insensitivity Support Syndrome Support Group Australia*, et al.,* 2017) informs our investigation of *somatechnologies* and eligibility regulations/tests in women’s sport. [↑](#footnote-ref-4)
5. Some of MacLure’s questions that were useful for this analysis were: 1) How are different knowledge claims established and defended? 2) Where does this text get its authority? 3) How does this text persuade [or not persuade]? 4) Where does power reside in this text? 5) Whose ‘voices’ are privileged in this text? Who is silenced? 6) How are subjects drawn in this text? Who gets agency? 7) Where are the gaps, silences and inconsistencies in this text? (Macluse, 2003, 82). [↑](#footnote-ref-5)
6. Body Modification: Changing Bodies, Changing Selves (2003) and Body Modification Mark II (2005). [↑](#footnote-ref-6)